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Daily News Analysis

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1. Mangroves

- Prelims - Mangroves
- Mains - GS 3 - Environment (Biodiversity)

Why in the news?

- A recent study shows that cell arrangement in mangroves makes salt tolerant.

Mangroves

- **What is it?:** *Mangroves are small trees and shrubs which grow along the coastlines and swamps.*
- **Facts to Know:**
 - India's contribution is **45.8% total mangrove cover in South Asia.**
 - According to the **India State of Forest Report, 2023**, the mangrove cover in India is 4,991 sq km.
 - **West Bengal** has the highest percentage of area under total Mangrove cover followed by **Gujarat and Andaman Nicobar Islands.**
- **Significance of Mangroves:**
 - **Storm and Wave Protection:** Absorb wave and storm surge energy, reducing coastal damage from cyclones and tsunamis.
 - **Flood Mitigation:** Their root systems stabilize soil and control water flow, reducing coastal erosion and flood risk.
 - **Carbon Sequestration:** Mangroves store carbon, helping to mitigate climate change and lower the risk of climate-driven disasters.
 - **Support for Biodiversity and Livelihoods:** Sustain marine biodiversity, supporting fisheries and livelihoods crucial for post-disaster recovery.
 - **Water Quality Improvement:** Mangroves filter pollutants, ensuring cleaner water supplies, which aids disaster resilience.
 - **Ecosystem Services for Recovery:** They help in ecosystem recovery after disasters by supporting wildlife and local fisheries.





2. Dugong

- Prelims - Dugong
- Mains - GS 3 - Environment (Biodiversity)

Why in the news?

- Fossils indicate that Dugongs have shaped the Persian Gulf for over 20 Million years.

Dugong

- **What is it?:** Dugong (*Dugong dugon*) also called 'Sea Cow' is the only existing species of herbivorous mammal that lives exclusively in the sea including in India.
- **Distribution and Habitat:** Found in over 30 countries and in India seen in the **Gulf of Mannar, Gulf of Kutch, Palk Bay, and the Andaman and Nicobar Islands.**
- **Threats:**
 - Habitat degradation (especially of seagrass beds)
 - Boat strikes and Entanglement in fishing nets
 - Pollution (oil spills, plastics)
 - Climate change and rising sea levels
 - Illegal hunting (though now rare in India)
- **Conservation Status:**
 - IUCN Red List status: Vulnerable
 - Wild (Life) Protection Act, 1972: Schedule I
 - CITES: Appendix I
- **Conservation Efforts:**
 - **India's Effort:**
 - ★ Dugong Conservation Reserve: India's first in Gulf of Mannar, Tamil Nadu (2022)
 - ★ Integrated Coastal Zone Management (ICZM)
 - ★ Recovery Programme for Dugongs under National Biodiversity Action Plan (NBAP)
 - **International Efforts:** Part of UNEP's Dugong Conservation Programme



3. Cyclones and Flood Risk in South and Southeast Asia

- **Prelims** - Cyclones and Flood Risk in South and Southeast Asia
- **Mains** - GS 1 - Geography (Climatology) , GS 3 - Environment (Climate Change)

Why in the news?

- Recent study shows increase in cyclone and flood events in the south and south east asia due to influence of climate change and

Cyclone

- **What is it?:** *A cyclone is a large-scale atmospheric system characterized by inward-spiraling winds rotating around a center of low pressure. Cyclones rotate counterclockwise in the Northern Hemisphere and clockwise in the Southern Hemisphere due to the Coriolis effect.*

Cyclone in South and Southeast Asia

- **Role of Climate Change:**
 - **Global Warming Effect:** World ~1.3°C warmer since mid-1800s; atmosphere holds ~7% more moisture per 1°C rise, intensifying rainfall.
 - ★ Sri Lanka: 5-day heavy precipitation 28-160% more intense.
 - ★ Malacca Strait (Indonesia/Malaysia): Extreme rainfall up 9-50%.
 - **Sea Surface Temperatures (SSTs):** North Indian Ocean SSTs 0.2°C above 1991-2020 average during storms
 - **Limitations:** Precise climate change attribution challenging due to El Niño-Southern Oscillation and data gaps.
- **Role of Deforestation:**
 - Causing Accelerated runoff, higher flood peaks, landslides killing. **E.g.: Sri Lanka**
 - Reduced flood barriers, slope instability in **Sumatra** and intensified floods/landslides in **Indonesia**.
- **Role of Urbanisation:**
 - **Increased Exposure:** More people, roads, railways, cropland in flood-risk zones in Sri Lanka and Indonesia.
 - **Vulnerabilities:** Informal housing, service failures, poor land-use planning.



4. Sujalam Bharat App

- **Prelims** - Sujalam Bharat App
- **Mains** - GS 2 - Governance (Government Policies and Welfare Measures)

Why in the news?

- Union Jal Shakti Minister launched Sujalam Bharat App.

Sujalam Bharat App

- **What is it?:** A nationwide digital platform providing real-time, geo-referenced data on rural drinking water schemes, designed for citizens, Gram Panchayats, VWSCs, States/UTs, and institutions.
- **Nodal Ministry:** Union Jal Shakti Ministry, under Jal Jeevan Mission
- **Objective:** Strengthen digital governance, transparency, and sustainability of rural drinking water supply.
- **Key Features:**
 - **Sujal Gaon ID (Unique ID):** Assigned to every rural water scheme and its service area.
 - **Unified Digital Database:** Integrates Water sources (local / bulk), Asset inventories & scheme design, Operational & maintenance (O&M) records, Water quality reports and Supply metrics & service reliability.
 - **Digital Components:**
 - ★ Advanced geo-referencing using GIS
 - ★ Integration with PM Gati Shakti GIS
 - Promotes **community ownership**, participation, and oversight
 - **Nationwide training & orientation** conducted by BISAG-N



5. Prelims Pointers

- **Hydrogen Fuel Cell**

→ Hydrogen fuel cells convert hydrogen's **chemical energy into electricity** through an electrochemical reaction with oxygen, producing only water and heat as byproducts.

→ Fuel cells achieve **over 60% efficiency**, far exceeding combustion engines, and emit zero pollutants, supporting clean energy transitions.

- **Champions of the Earth Award**

→ It is the **United Nations Environment Programme's (UNEP)** highest environmental honour.

→ Established in 2005 to **recognize individuals and organizations** driving innovative solutions to planetary crises like climate change, biodiversity loss, and pollution.

→ The award features **four categories** and nominations are open globally, evaluated on impact, novelty, and influence, with annual themes.